# Application Strategies for Neuroscience in Information Systems Design Science Research

Jan vom Brocke, University of Liechtenstein, René Riedl, University of Applied Sciences Upper Austria & University of Linz, Pierre-Majorique Léger, HEC Montréal
Corresponding author: jan.vom.brocke@uni.li

In this talk, we present a recent paper on application strategies for neuroscience in information systems (IS) design science research (vom Brocke et al. 2013). Design science has evolved as a major research paradigm in the IS discipline, which aims to design innovative and useful IT artifacts, such as conceptual models and software systems. Despite the increasing attention paid to the cognitive and emotional mechanisms that underlie the perception of such artifacts, studies that examine the neurobiological determinants of these mechanisms have only recently begun to emerge. A major argument for the use of neurobiological approaches in IS design science research is that IT artifact design may significantly benefit from neuroscience theories, concepts, methods, and data. The consideration of neuroscience may improve IT artifacts' alignment with users' perceptual and information processing mechanisms, particularly the brain.

Against this background, this talk presents a taxonomy of application strategies for neuroscience in IS design science research. It describes three major areas of application (see Figure 1) and explains that conducting research in an area comes with a specific set of requirements (e.g., applicability, costs, accessibility, and knowledge relevant to planning and conducting a research project). Therefore, if an IS design science scholar decides to draw upon neuroscience, the taxonomy transparently explains possible working areas and corresponding requirements. The taxonomy is described based on example studies.

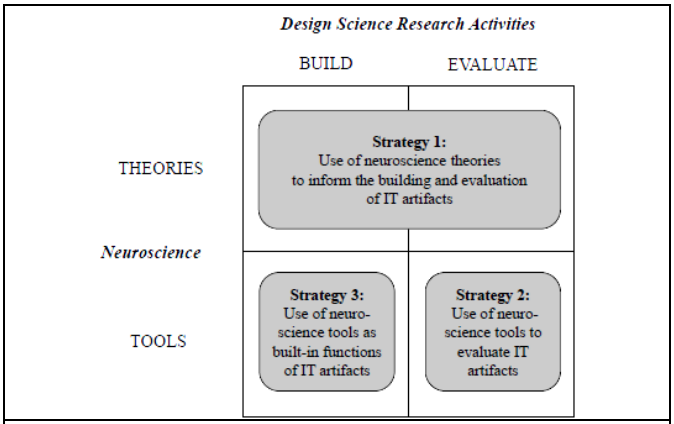


**Figure 1.** NeuroIS Design Science Research Framework (Source: vom Brocke et al. 2013, p. 3)

Taking this taxonomy as a basis, in the talk we also discuss the current NeuroIS literature and research from related fields (e.g., affective computing). We also explain that the degree of knowledge required implementing the strategies increases from Strategy 1 to Strategy 3. For example, developing an IT artifact with a built-in neuroscience functionality (Strategy 3) requires more knowledge than does using a neuroscience theory to inform the design of an IT artifact (Strategy 1).

## REFERENCES

❖ vom Brocke, J., Riedl, R., Léger, P. 2013. "Application Strategies for Neuroscience in Information Systems Design Science Research," *Journal of Computer Information Systems* (53:3), pp. 1-13.